FORM D.

Whereas Mr. , at present residing at , has submitted to us a certificate of the $\frac{\text{Superior}}{\text{Very superior}}$ class issued to him by

The Commandant, School of Military Engineering, Chatham,

The Commanding Royal Engineer, Southern District, Portsmouth.

The Commanding Royal Engineer, Western District, Plymouth.

[a] The Commandant Ordnance College, Woolwich [a]

we, in accordance with the provisions of the Bombay Boiler Act of 1891, Section 22, hereby authorize him to be in charge of Military boilers attached to prime-movers of not exceeding 20 horse-power nominal on the production of this certificate.

Dated at the day of 190 .

Board of Examiners.

Duplicate of this certificate has been recorded in the Steam Boiler Office this day of 190 .

Collector and President, Board of Examiners.

APPENDIX C.

(*See rule 58.*)

Examination in Rough Working Drawing for a First Class Engineer's Certificate of Competency.

1. The regulations in regard to the qualifications of a candidate for a First Class Engineer's Certificate of Competency specify that—

"He must be able to make rough working drawings of the different parts of the engines and boilers;

"He must be able to state the general proportions borne by the principal parts of the machinery to each other."

2. In accordance with these clauses a candidate for a first class certificate is required to make a rough working drawing of the parts specified on the other side of this leaf. A mechanic who has been some years in charge of engines and boilers ought by this time to have familiarly in his mind the general construction of at least one set of engines and boilers, say that set he was last with. Fine drawing is not expected, and in the proportions of the parts a wide margin will be allowed; absurd dimensions will be failure in practical knowledge.

[a—a] These words were inserted by G. N. No. 3522, General, dated 27th June 1905, *B. G. G.*, 1905, Pt. I, p. 784.

3. The drawing must, however, be practically a working drawing giving a sufficient number of views to show the parts fully —sections, plans, or elevitions, just as the candidate would require to be supplied to him if he had to make the parts to the design of another person.

4. A clear hand sketch showing the construction completely, and fully dimensioned will be accepted if the candidate prefers this alternative.

5. A portion only of the parts specified may be accepted in place of the whole, if that portion is sufficient to show that the candidate has a good partical idea of the construction of the parts, and a fair notion of their general proportions or dimensions.

6. Candidates are hereby cautioned not to put on paper what they have not fully considered, and deliberately intend to be understood, as their statement of what they know about the construction of any part required.

7. The statements given in by a candidate may be in themselves apparently, of little importance, but, as sample material from which the state of the candidate's knowledge of engines and boilers is to be inferred, every detail which is glaringly inconsistent with a sound knowledge of the use of the part, or in which an essential consideration has evidently been overlooked, is an important element in the description which the candidate is giving of his own qualifications.

8. The candidate is advised not to begin more than he can clearly finish in the time allowed. An important object in this part of the examination is to ascertain whether the candidate can be trusted to mark all necessary dimensions upon a sketch or a drawing. The test of this is, practically, the making of the part from the sketch without having to supply additional dimensions, and without measuring the drawing. To prove this ability the candidate must fully dimension the parts shown in his sketch or drawing notwithstanding that the parts may be correctly drawn to scale. A drawing is fully dimensioned when no part of it is left to the option of the party who is to work to the drawing.

9. To prevent misunderstanding, however, when the candidate has been led into showing more of the details than he has time fully to finish, he should name, in the statement on the other side, the particular parts which he has fully dimensioned.

10. All dimensions should have lines and darts to indicate distinctly the points between which the dimensions are given.

11. Beware of writing cross dimensions upon centre lines or upon longitudinal dimension lines. This is not an order but a recommendation.

12. The candidate is not expected to design anything: he has merely to sketch or draw something with which he is expected to be already familiar.

13. Pencil in nothing after 3 o'clock: all the dimensions, the figures and the darts must be inked in; employ the remaining time in examining the drawing and in inking in any figures which may have been before overlooked, and in checking the dimensions.

14. Make sure that you will have sufficient room on the sheet to show all the necessary views. You can have another sheet of paper if necessary. All the paper used must be forwarded with the drawing.

15. Fill in and sign the following statement:-

SUBJECT FOR EXAMINATION IN ROUGH WORKING DRAWING.

(Read the foregoing General Instructions.)

A common slide valve with its spindle. Show also an outline section of the parts at the cylinder face. Show the provision for connecting the slide valve to the spindle.

The candidate is requested to fill up the following and to attach this paper to his drawing :—

STATEMENT BY THE CANDIDATE.

The accompanying drawing made by me this day, without referring to any document, and without the assistance of any person, is intended by me to be sufficient for the new construction of the parts above described, to fit the places of similar parts which are to be removed. The construction is similar to what I have been with in the _____ Factory, Mill or Worshops _____, but the dimensions may be different.

The diameter of the cylinder is _____

The stroke of the piston is _____

The stroke of the valve is _____

The cover at top end on steam side is _____

The cover at bottom end on steam side is _____

The lead at top is intended to be _____

The lead at bottom is intended to be _____

The inside cover is + _____ or _____

The thickness of the face of valve is _____

The thickness of the body of valve is _____

The greatest opening for steam will be _____

That gives an area equal to one _____

The opening for exhaust when the crack is on the top centre is _____

That gives an area equal to _____ th of piston.

The length of the connecting rod is _____

The valve will cut off steam on the down stroke at ___

The valve will cut off steam on the up stroke at _____

The candidate may omit this part if he chooses.

The parts fully dimensioned, in ink, are _____

Dated at _____

this _____ *day of* _____ *190* .

_____ Applicant.